

A TREATISE
ON
CORN, BUNIONS,
AND
INGROWING OF THE TOE-NAIL;
THEIR
CAUSE AND TREATMENT.

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LONDON:
JOHN CHURCHILL, PRINCES STREET, SOHO.

MDCCCLII.

C. AND J. ADLARD, PRINTERS, BARTHOLOMEW CLOSE.

R34069

PREFACE.

THE substance of the following remarks appeared in the second volume of the 'Medical Times and Gazette' of this year. In presenting them to the profession in a separate form, I have made some additions and given such quotations from other writers as tend to elucidate the subject. I have also subjoined a Chapter on "Ingrowing of the 'Toe-nail," a subject that has latterly engaged some attention in the journals.

In conclusion, I trust this contribution to a humble branch of surgery may prove acceptable, and tend to restore it to its proper channel.

31, CAVENDISH SQUARE;
Sept. 1852.



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ON
CORNS, BUNIONS,
AND
INGROWING OF THE TOE-NAIL.

INTRODUCTION.

THE following pages are intended to direct attention to a humble, but not unimportant branch of surgery which has not generally received the consideration the subject merits of the profession, when we recollect the frequency of the affections and the great pain and misery they give rise to. And I am inclined to believe there are many who are unacquainted with the formative process and

pathological condition of the tissues in the case of corns and bunions, not on account of any great difficulty in the investigation of the subject, but that surgeons have been too exclusively occupied with the study and investigation of those diseases which in their nature are of a more serious character, or possess a fatal tendency, to the neglect of the minor ills that afflict us, but which frequently interfere very considerably with the enjoyment and comfort of existence. Of these lesser ills, few there are in the better classes of society who are not more or less martyrs to the affections herein treated of, and among surgeons themselves many must be able, from personal experience, to testify to the pain and suffering arising from corns and bunions.

In the treatment of the common and painful affection, corns, it is not the removal of the indurated cuticle that the surgeon has alone to consider ; the same cause that induced the increased formation and induration of epidermic

cells may give rise to inflammation and supuration, and in debilitated and broken-down constitutions, corns and bunions from improper treatment have even been the cause of gangrene and death.

As will be seen hereafter, the apparently simple affection of a corn has given rise to such intense agony as to lead to self-mutilation, and in other cases the patients have been induced to supplicate the surgeon to remove by amputation the toe on which a painful corn has been situated.

Unfortunately the treatment of these affections has fallen into the hands of unqualified persons, whose entire want of all professional knowledge frequently entails serious consequences on the unhappy sufferer.

The late Mr. Liston, in his Surgical Lectures delivered at University College, was accustomed to lay some stress upon these affections, and strongly recommended his hearers to embrace some of the many opportunities

that presented themselves in the hospital and dissecting room of investigating their nature. In the seventeenth volume of the 'Medical Gazette' is published an admirable clinical lecture upon the subject by Sir B. Brodie, and Mr. Aston Key published an excellent paper upon bunions in the first volume of 'Guy's Hospital Reports.'

CHAPTER I.

CORNS.

SECTION I.

STRUCTURE AND FORMATION.

THE epidermis or cuticle, the abnormal condition of which constitutes the affection under consideration, belongs to the class of epithelial structures, and forms a protective covering to the whole of the cutis, corium, or true skin. In itself it is non-vascular and insensible; it is moulded to the surface of the cutis, and presents, when separated from it by maceration, impressions corresponding exactly with the papillary and other eminences, and the furrows and depressions of the true skin. Its structure is laminated, being made up of flattened cells, but which, when first secreted from the cutis, are round, and contain nuclei

with soft and moist contents. These cells are gradually pushed towards the surface by the formation of others beneath, and as they arise are altered in form, becoming flattened into thin scales, and at the same time lose their nuclei; they are ultimately thrown off by desquamation. The cells, when first secreted, and viewed under the microscope, exhibit opaque and granular contents, soluble as well as their envelope in acetic acid; but as they approach the surface and assume the form of scales rather than cells, they are no longer affected by that acid; and it would appear as if their contents had undergone a change, part of the substance being employed in cementing the scales together, while the other portion is converted into a dense, horny tissue.

The cuticle varies in thickness in different parts of the body, being greatest in those parts most exposed to pressure and friction, as in the palms of the hands and soles of the feet; but though there cannot be the slightest doubt

friction and pressure stimulate the subjacent corium to an increased secretion of the cuticle, causing it to attain a very considerable thickness in the part so irritated, as exemplified in the palms of the hands of many mechanics, such as smiths, masons, carpenters, and others, as also in the soles of the feet of those who walk greatly, yet the same difference obtains in the foetus, only in a less marked degree.

A corn is, in the first instance, a thickening of the cuticle, but every thickening of that tissue does not constitute a corn, a name chiefly applicable to those cases where the cuticle over projecting points of bone and joints, from pressure and friction being, as it were, there concentrated, not only becomes thickened, but condensed, and assumes more the character of horny structure. But this is not all, for on making a careful dissection, a small synovial sack, or bursa mucosa, similar to those which are of original formation, is found at the apex of the thickened and indurated

cuticle, between it and the cutis. By the continuation of the exciting cause, the sensibility of the cutis vera becomes highly exalted, the papillæ are irritated and enlarged, and the patient suffers extreme torture, the part becoming even sensible to slight atmospheric influences.

There is another kind of corn, denominated a soft corn,—a still more painful affection than the preceding, and differing from it both in position and structure.

In a volume of some dimensions, of doubtful authorship, but bearing the name of a Chiropodist on the title-page, and abounding in the grossest absurdities, set forth in such a plausible manner as to be well calculated to ensnare the unwary sufferer, corns and callosities are divided into species, genera, and the reader is even threatened with a subdivision into varieties, but in mercy the punishment menaced is spared to those who shall have been unfortunate enough to commence

the perusal of the book. Corns are there divided into four genera, "the hard corn, the soft corn, the bleeding corn, and the black corn." Of course the several names are Latinized so as to appear scientific, and then translated, as I imagine, for the benefit of the general reader.

Having had for some years, through the kindness of a professional friend, numerous opportunities of investigation in the dead house of a large metropolitan parochial infirmary, the following is the result of my observations and dissections, and will explain the true structure of the several genera, and rob the *clavus niger* of the horrors with which it is invested by the author (?) I allude to, who would make his reader believe it a most dangerous and almost fatal affection.

All hard corns, as I have before mentioned, are formed of condensed and indurated epithelium cells, or scales with a bursa at their apices. The latter structure would appear to

be an effort of nature to afford protection to the tender and sensitive cutis, as observed in other situations similarly exposed to pressure. Some corns have but a limited base or surface, and these generally penetrate deepest, and, as would be expected, have the bursa most perfectly developed. Others have a broader surface, and usually have a spine situated about their centre, descending towards the cutis, but seldom penetrating so far as those just described. I imagine this to be the kind of corn to which the term sanguineous or neuro-sanguineous is given by chiropodists, certainly the most inappropriate of all they could have invented, when it is recollected that the material constituting and forming a corn has no blood-vessels, consequently cannot be sanguineous and bleed as represented by them, neither does nervous tissue enter into their structure. The true explanation being that most corns with broad surfaces have the papillæ beneath them greatly enlarged and

projecting into their texture, and if a section be made through the corn near the surface of the cutis, the projecting papillæ will be divided, and a number of circular bleeding points present themselves which certainly pour out blood freely enough. It is in this kind of corn that chiropodists discover their “nests or crops of corns,” and from which they reap a most abundant harvest, they pretending the depressions between each papillæ is a separate corn.

Hard corns sometimes assume a fibrous rather than a laminated appearance, which originates thus:—When the corn has existed a length of time some of the central papillæ become much more elongated than others, from the constant irritation that has been maintained, and instead of producing ordinary epidermis, form for themselves sheaths which are pushed up to the surface by fresh formations at their base, and as they arise impart the fibrous appearance observed. These elon-

gated papillæ are surrounded by others in a less advanced state of hypertrophy, and which form a consolidating epidermic matter around the papillary sheaths, retaining them in connection with the laminated epidermis.

Mr. Erasmus Wilson's¹ investigations led to the same conclusions as to the cause of the fibrous appearance of some corns. He says: "In directing my researches to corns, I found that the dermis of corns of old standing, and such as presented the fibrous central appearance to which I have alluded above, was remarkable for a tuft of these long papillæ in the centre of the hypertrophied patch, and that these elongated papillæ corresponded uniformly with the fibrous structure of the corn. Continuing my investigations, I perceived that in the laminated corn, the papillæ, though hypertrophied, were pretty uniformly of the same length, and not so long as to interfere with the ordinary laminated

¹ On Diseases of the Skin, pp. 256-7. Churchill, 1842.

mode of formation of the epidermis; that by degrees, however, the papillæ of the centre of the congested patch of dermis became more and more elongated; at first this elongation was confined to a tuft of greater or smaller size. It is clear that this elongation of the central papillæ is dependent on the greater degree of pressure effected on the central point of the corn, and on the continuance of the pressure in that situation, even when the rest of the surface is protected. Indeed the larger growth of the central papillæ, with the consequent larger formation of the epidermis, serves for a time as a means of protection to the circumjacent papillæ.

“ Whenever hypertrophied and isolated papillæ of the dermis reach a certain length, they act as independent organs, and instead of combining with the shorter papillæ in producing a laminated epidermis, they form each for itself a distinct sheath, which becomes elongated by a continuance of growth to an

indefinite length. On the tongue, where the papillæ are widely separated from each other as compared with the dermis, I have collected specimens of elongated epithelial sheaths, fully half an inch in length, and in this situation, in consequence of the wide separation of the papillæ, the sheaths are perfectly distinct; but in the dermis, the lengthened papillæ, though isolated, are surrounded by multitudes of shorter papillæ, which form a consolidating epidermic mesh around the papillary sheaths, and retain them in close connection with the laminated epidermis. It is the existence of these papillary sheaths in the centre of corns of ancient date, that gives rise to the fibrous structure apparent on the surface of a vertical section. These sheaths are sometimes of an opaque, white colour, and differently tinted from the rest of the epidermis, from some trifling disturbance in the formative process, such as that which gives rise to the opaque white spots on the finger-nails.

“The following experiment, which I have repeatedly made, will prove the accuracy of these views:—If you pare an old corn slice after slice with a sharp knife, and observe the face of each section, you will come to a semitransparent surface, immediately beneath which, in two or three spots, you will perceive a red coloured point. This point is the extremity of an hypertrophied papillæ, much larger than the rest. The next section will cut off the point of this papillæ, and there will be a slight oozing of blood. Another section will cut off the heads of several, another again of still more.

“Corns sometimes give rise to serious consequences; by pressure on bursæ they produce bunions; when seated on joints they often excite inflammation of the structures, entering into the formation of the articulation, exostosis of bones, &c. I once dissected a corn situate on the metatarso-phalangeal articulation of the little toe, which had made its way into the

joint, and had produced absorption of the articulating ends of both bones."

The soft corn differs entirely from the hard variety. It is not an induration and thickening of the cuticle, but an excessively painful fungus growth from the cutis vera, and occurs between the toes. A corn of the same structure as the hard corn is sometimes developed in the same locality, but never assumes the horny texture as on the top of the toe.

I now come to the formidable "clavus niger, or black corn," which is formed thus: a hard corn has existed on one of the joints of the toe, and at the time of some sudden and violent exertion, as leaping while the feet are heated and congested, or perhaps when the cutis beneath the corn is inflamed, a minute quantity of blood is extravasated between the newly-formed cells of the epidermis, appearing as a small black speck in the centre of the corn. If after a few days of this taking place the corn should be removed, the blood will be

found still fluid, but as the cells arise towards the surface, and are flattened into scales, the blood is extended between them, and dries, imparting the dark colour to the corn. The same effect may be produced by a blow on the toe when it is in the state described, or it is occasionally formed by one of the papillæ being so slightly wounded during the operation of cutting a corn, as to permit of a minute exudation of blood, but not sufficient to be perceptible externally. The symptoms and pain arising from this dark intruder on our comfort will be precisely the same as those caused by its fairer brother under similar circumstances.

SECTION II.

CAUSES AND EFFECTS.

The predisposing causes of corns arise from malposition and contraction of the toes, which may be due to contraction of the tendons and muscles either congenital, or in consequence of nervous irritation during dentition, or from wounds and ulcers involving the muscles of the leg, or what is more frequently the cause, undue and unequal pressure of boots and shoes not adapted to the form of the foot; and which also act as the exciting cause of this painful affection. Sir B. Brodie in his Clinical Lectures on this subject published in the 'Medical Gazette,' so correctly and clearly describes the evils arising from wearing boots and shoes not fitted to the feet, that I shall here quote his words: "If shoes were constructed of the shape of the human foot, neither too large nor too small, and making an equal pressure every where, corns and

bunions of the feet would never exist. But, unfortunately, shoes are seldom made after this fashion, and in ladies' shoes especially there are generally two signal defects: first the extremity of the shoe is much too narrow for that part of the foot (namely the toes) which it is to contain; and secondly for the purpose of displaying as much of the foot as possible, the whole of the tarsus and metatarsus is left uncovered, and the pressure of the shoe in front is thrown entirely on the toes. The toes are thus squeezed against each other, and then pushed out of their natural position; and all the projecting points, chiefly where the joints are situated, are pinched and tormented either by their neighbouring toes, or by the leather of the shoe, and thus it is that corns of the feet are generated.

“In order to understand the precise situations in which corns are most likely to take place, it is necessary to consider more particularly the effects which the pressure of the

shoe produces on the toes. The little toe is pushed from its parallel position, so that it is in fact underneath the fourth or adjoining toe, and corns are generated on its outer surface over the prominences of the joints. A corn is also frequently met with in the angle between the little toe and the next toe where the first phalanx of the former is pressed against the head of the metatarsal bone supporting the latter. Sometimes the consequence of wearing a very narrow shoe is, that one of the toes (and it is generally the second or fore toe,) is pushed upwards, (fig. 1,) so that it lies over the adjoining toes, that is, over the great toe and third toe, the extremities of which come in contact underneath; then the leather of the shoe is drawn tight over the surface of the second or displaced toe, and corns are produced over one or more of the articulations. At other times one of the toes (and in this case also it is generally the second toe,) is displaced

in another way. The extremity is pushed downwards, so that it lies underneath the extremities of the adjoining toes, (fig. 2,) which come in contact over it. But this change cannot take place while the phalanges of the displaced toe remain in a line with each other. The first and second phalanx make an angle projecting upwards. The second joint of the toe becomes prominent above, and a corn is formed over it. If the shoe instead of being too narrow, be too short for the foot which it contains, the last phalanges of all the smaller toes are kept constantly in a half-bent state, and a row of corns is generated, one being situated in the upper part of the last joint of each of these toes. I have endeavoured to enumerate what may be regarded as the most ordinary localities of corns; but, of course, they may be produced anywhere else, according to the shape of the shoe, the mode of walking, and other circumstances."

The wearing of boots too short for the feet

occasions other evils besides the cramping the whole of the toes and leading to the formation of corns. The arch of the tarsus thereby becomes considerably increased, producing a projection of its dorsum and corresponding hollow in the sole, rendering the foot altogether shorter than nature intended it to be, and the act of progression uneasy and cramped. A painful corn forms over the most prominent part of the *os cunifforme internum*, or on the prominent part of the arch, where that bone articulates with the *os naviculare*.

The following, narrated by the late Mr. Aston Key, in the first volume of 'Guy's Hospital Reports,' will illustrate the evils of cramping the natural extension of the foot.

"A remarkable instance of this kind of deformity occurred in a boy who was admitted into the hospital with a sore on the ball of the great toe. The lad had been observed to walk lame for a great length of time, in consequence of a small sore which

had resisted all the ordinary means of treatment, under the hands of an experienced country practitioner. A lady of the village where he resided obtained admission for him into the hospital. The sore on the foot was a circular foul ulcer on the ball of the great toe, not deep but of an unhealthy character. The shape of the foot immediately struck the eye as being peculiar and somewhat deformed. The tarsus was more arched than usual, and the phalanges of the toes formed angles with the metatarsal bones, being thrown upward so as to make the balls of the toes more than usually prominent. The great toe was very much distorted upward, and the ball was thus rendered so prominent as to sustain much inconvenience in walking; the result was that the skin became inflamed and at length ulcerated. His father, in order to make his shoes serviceable, had them cased with iron around the edge of the sole. The effect of this was that the shoes certainly did

not wear out, but his feet as they enlarged were obliged to regulate their growth by the form of their iron case; and after he had worn his shoes twelve months, his feet became too large for them, and he limped from the pain which the compression occasioned. His father, however, compelled him to wear his shoes, but could not prevent the feet growing, and the end of his foot assumed the form described.

“About the same period a young man was in the same ward, (Phillip’s,) with a deep ulcer at the under part of the great toe, with which he had been troubled for many weeks. On examination, I discovered some exposed bone at the bottom of the sore, which I removed with the forceps; it proved to be one of the sesamoid bones. The sore quickly granulated, and with the assistance of a creosote lotion, (which I find to be the most effectual application to cutaneous sores on the sole of the foot, that often cicatrize with difficulty,) it speedily became a sound surface.

The abscess which preceded the sore had been caused by the pressure and distortion occasioned by small and short shoes."

The pain arising from this common affection must be familiar to most, and varies in intensity according to the condition of the corn, and the subjacent cutis, and the nervous irritability of the patient, also upon the more or less inflammatory state of the system generally. In some people it is so great as to render their life perfectly miserable. The following case of self-mutilation, occurring from the intense agony arising from a hard corn on the little toe, was communicated to me by a gentleman who was dresser to Mr. Mayo at the time, and who had charge of the patient. Some years since, a servant girl, æt. 20, suffered such extreme pain from a corn, that to get thoroughly quit of her tormentor, she cut off the little toe of the left foot, by placing a knife on it and striking the knife either with a cleaver or mallet. Considerable hæmorrhage occurred

from the divided arteries: her mistress becoming alarmed, she was taken to the Middlesex Hospital, at a late hour of the night, and admitted a patient of Mr. Mayo; her recovery was slow, owing to the end of the bone being left entirely exposed; as by her mode of amputating no flap was left to cover it.

When a corn begins to be formed no great inconvenience is experienced, only a slight pain and tenderness of the part is felt after taking much exercise. But soon the pain and tenderness increase, the former being of a sharp lancinating character, and may extend to the under surface of the toe as well as the upper. The whole foot becomes hot and uneasy, and slightly swollen after walking. When evening arrives, the patient is glad to take off his hard eather shoe or boot and assume a loose slipper. He is now relieved; and during the night by rest and absence of pressure the symptoms subside, but only to return with the wearing of the boot, and exercise during the day. By the

continuation of the cause, the bursa beneath the hardened cuticle becomes inflamed and distended with fluid, and the pain is greatly aggravated. Should suppuration take place in the bursa, the pain is then excruciating, from the matter being pent up in tissues incapable of yielding to the distension. The foot becomes red and swollen, and the leg also may become affected; the pulse is quickened, the skin hot, and the tongue furred, in fact the whole system is affected by a degree of inflammatory fever being set up. The two following cases are illustrative of the extent of local mischief and constitutional disturbance produced by a suppurating corn.

In the summer of 1845, I was requested to see Mr. W—, a gentleman engaged in the city, who I found with a countenance indicating great suffering, tongue furred, skin hot, pulse quick, slight thirst, and loss of appetite. He told me he feared he had erysipelas of the leg. On examining the part, I found the

whole foot and ankle swollen and tense, with slight redness, increasing towards the toes; on the joint of the fourth toe he had a corn which had troubled him much of late; the toe was exceedingly painful, and the corn had a pearly appearance in the centre: with a small scalpel I carefully removed it, and found a small quantity of pus beneath it; immediate relief followed. I prescribed some ordinary medicine for the purpose of allaying the constitutional disturbance which had been excited, and the next day he was quite well. Other similar cases have come under my care; and a short time since I attended a young married lady in whom both the local and constitutional symptoms were of a much more aggravated character than in Mr. W—. Removal of the corn and evacuation of a drop of pus immediately relieved the pain, but it was several days before the swelling of the leg and foot, and the constitutional excitement, entirely subsided.

SECTION III.

TREATMENT.

By proper and judicious treatment, and constant attention, a patient with corns may be maintained in comfort, but the disease cannot be entirely removed without the removal of the predisposing cause, namely the malposition of the toes, and wearing boots and shoes not fitted to the foot.

In the treatment of corns chiropodists have recourse to mechanical contrivances to keep off the pressure of the boot from the part where the corn is situated; but from the manner in which they are applied, soon increase the evil they were intended to remedy. I allude to the common practice of applying pieces of thick leather spread with adhesive plaster, and having a hole cut in them over the projecting and affected joint. For a short time they may answer the purpose intended; however, the evil arising therefrom is soon

made manifest, by the joint becoming more angular and peering through the aperture in the leather, the thickness of which is then increased from time to time, till at last the phalanges of the offending toe are completely doubled one on the other, and the second state of the patient is rendered worse than the first.

A corn having formed, it is necessary the hardened and indurated cuticle composing it should be carefully removed, so that the tender cutis beneath may be relieved from pressure and irritation. This may be effected by various means. First, it may be destroyed by the nitrate of silver rubbed on the surface of the corn, or what is preferable, by the application of concentrated nitric acid, applied by means of a small glass rod, or by a probe of ordinary shape, but which should be either of gold or strongly gilt, that it may not be acted on by the acid. The texture of the cuticle will thus be destroyed, and in a few days exfoliation will take place, and the corn may

be peeled off. Secondly, the corn may be reduced by rasping it with a steel file or fish skin, but this plan must not be attempted if the toe is inflamed or in an irritable state, as considerable pain will be occasioned. Thirdly, the corn may be removed by means of a small sharp scalpel, a method much simpler, shorter, and better than the preceding.

After a corn is removed its reformation may be greatly retarded, but not entirely prevented, by the proper application of plasters and pads to relieve the parts of pressure. In many cases it will be necessary continually to keep the joint where the corn is situated protected by plaster, the feet being well sponged, and the plaster renewed every morning. The emplastrum plumbi or the emplastrum saponis spread on thick soft silk, or on amadou, answers very well. Leather is very objectionable on account of its becoming hard by the perspiration of the foot. The plaster acts beneficially in two ways :—first, the pressure of

the boot is diffused over a larger surface; secondly, the resinous matter of the plaster prevents the induration of the cuticle. When the integument beneath a corn is irritable and painful, benefit will arise from the use of a plaster composed of alcoholic extract of aconite, and lead plaster spread on silk or amadou.

I have previously condemned the improper modes in which pads intended to relieve pressure are applied, but if properly arranged they may be exceedingly useful in many instances. They should be large that the pressure may not be concentrated around the margin of the corn; the aperture in the centre should correspond to the size of the corn, with the edges evenly and smoothly bevelled, the external edge should be also cut in the same manner. Buckskin is objectionable, for the reason urged with respect to leather for plasters; directly it becomes damp by perspiration it loses its elasticity and is hard. Amadou, or a soft felt, somewhat similar to that used for the hammers

of pianofortes, only of fine wool, answers the purpose admirably. To prevent the evil usually attending the use of pads a piece of thin plaster should be first applied over the joint intended to be protected, and its bulging will thereby be prevented. The same observance is especially necessary when the corn is situated on the sole of the foot, as the weight of the body exerts a powerful influence in producing a bulging of the integument through the aperture in the pad.

If the toe is inflamed it should be surrounded, on retiring to bed, with a double fold of soft lint dipped in tepid water, and over that a piece of oiled silk, or thin gutta percha, that the moisture may not evaporate. It must be repeated every night till the inflammation and tenderness subside. It can scarcely be necessary to add, that rest during the day will materially tend to hasten the desired result.

Should suppuration occur in the bursa situated beneath the corn, the existence of

which may be known by the excruciating pain, by the redness and swelling of the toe and foot, and by the constitutional disturbance often produced, no time should be lost ere the confined matter is evacuated, which will be followed by immediate relief, and it will appear astonishing so small a quantity of pus should have given rise to such intense suffering.

When suppuration has occurred beneath a corn, the disease is entirely removed by the operation for its relief, and will not return, provided pressure on the part is not again renewed.

By the mode of treatment I have mentioned, most patients may be kept free from their tormentors. But with a view to a permanent cure, it is necessary to have recourse to other means; that is, the causes producing the evil must be removed. In the first place, the shoe or boot should be made with a due regard to the shape and form of the foot of the individual. If it is a shoe the patient wears, it should be

made to cover the metatarsus and part of the tarsus, that the toes may not receive the whole of the pressure. It is very essential that the sole of the shoe or boot should be sufficiently wide for the foot, that the toes should not be squeezed and jammed one under the other, and the boot-maker should be directed to put pieces of leather on the lasts, corresponding to the joints where the corns are situated.

Some cases may require that the boots or shoes should be made of other material than the ordinary leather, either soft pliant buckskin, or a kind of cloth having the appearance of leather, and answering the intended purpose very well, to which the grandiloquent name of "*pannus corium*" has been given. Secondly, if the toes are displaced in any of the ways which have been mentioned, an endeavour should be made to restore them to their natural position by some well-arranged mechanical contrivance adapted to the peculiar case. That which will answer in many cases consists of a plate of

metal covered with leather, the width of the foot, and extending from the extremities of the toes nearly to the tarsus ; corresponding to the intervals between the toes are slits admitting tapes, by means of which the toes are bound down and retained in their proper places. The same result may sometimes be accomplished by passing strips of calico or linen about five eighths of an inch wide spread with plaster, first over those toes that are too much elevated, and then under the others, the ends of the plaster being brought across the instep and there fixed. The plaster requires some little nicety of application, but if neatly and properly done, will retain the toes in a parallel position, and on a level with each other. In employing these contrivances, it is necessary to persevere for some time before any permanent benefit can result, but by patience and perseverance much may be accomplished.

If the deformity has long existed, the toes having become fixed in their abnormal position,

it will be unavailing to attempt to restore them to their proper state. Under these circumstances it may become necessary to remove the offending member by amputation, or if the muscles acting on the toes be at fault, dividing the tendons will be sufficient.

Some years since, a soldier belonging to a cavalry regiment, went to the late Mr. Liston and entreated him to remove the second toe of each foot, stating he knew not a moment free from pain in consequence of corns situated on the toes named. Mr. Liston finding the first and second phalanges bent at an acute angle, forming a very prominent projection, surmounted by a corn, and the toes being nearly ankylosed in their unnatural position, sent the man to University College Hospital, where he amputated them. The operation was borne with much firmness, the patient first holding up one foot and then the other. When it was finished he refused all assistance, and walked from the operating theatre to the

ward. He made a rapid and perfect recovery. This man afterwards told me the pain of the amputation was trifling in comparison to that he had previously endured from the corns. Mr. Liston, in his remarks to those who witnessed the operation, mentioned other cases which had occurred in his private practice, where he had been compelled either to amputate the offending member, or to have recourse to tenotomy in order to restore the toe to its proper position.

Shortly after the period when Mr. Liston operated in the case just mentioned, I removed the second toe of the left foot of a person, on account of an exquisitely painful corn. He was a collecting clerk in a mercantile house in the city, and from the nature of his employment always on foot. I have also had occasion several times to divide the extensor and sometimes the flexor tendons of the toes, an operation attended with very little pain: I assert this from personal experience.

Sir B. Brodie mentions the following case,¹ in which he amputated a toe to relieve the patient of the sufferings from a corn. “A young lady of rank suffered from displacement and distortion of the second toe, such as I have already described. The extremity lay under the extremities of the two adjoining toes; the second and third phalanges were nearly ankylosed at a right angle to each other, and a corn was formed in the second joint, where it made a considerable projection above. She applied to me to amputate the offending toe. I answered I would do no such thing; that I might do it for a labouring person, but that her case was entirely different, as she had not to earn her livelihood by her bodily labour. She replied, you seem to treat the matter very lightly, but this toe and corn make my life miserable; I can take no exercise; I am unfitted for society; and I have tried all other methods of relief without success. On inquiry

¹ Medical Gazette, vol. xvii.

I was satisfied she in no way exaggerated her sufferings, and I therefore complied with her wishes, and amputated her toe at the first joint."

As previously stated, a soft corn differs in seat and structure from a hard corn, and is much more painful, except when suppuration occurs in the latter. Their chief seat is between the little toe and the fourth toe, being more frequently situated where the last joint of the fourth toe presses on the inside of the little toe, but may occur on any or several, according to the twisting and compression the toes may be subject to. The most effectual plan of treatment is, in the first place, to apply the concentrated nitric acid to the surface of the corn, only taking care to avoid its touching the surrounding parts. It should be so used as to penetrate the substance of the corn, but not to the parts beneath. The acid will shrivel and destroy its structure, and in a day or two

the hardened part may be removed, for which purpose a knife, similar to that used for enlarging the incision in the cornea in the operation for the extraction of cataract, is the most convenient instrument; it should be straight in the blade, and the rounded end have a cutting edge. Not unfrequently when a corn exists near the angle of the toes a considerable thickening of the cuticle takes place around it; this is usually very loosely attached to the parts beneath, and easily removed; the corn, which is situated in its centre, is of the same structure as a hard corn, and frequently penetrates deeply. The same thickening of the cutis also takes place in the feet of those who perspire freely, also in those who neglect to thoroughly dry between the toes after their daily ablutions.

Sometimes an abscess forms beneath a corn situated between the toes, giving rise to a great increase of pain, but is never so acutely painful as when suppuration takes

place beneath a hard corn, in consequence of the structures involved being of a more yielding nature than in the latter case.

Plasters applied over the surface of a soft corn have not the beneficial effect in retarding their growth and affording ease they have in the hard variety, but a small quantity of astringent ointment applied every morning after the feet have been washed and thoroughly dried will be of great service.

In some people the integument between the toes is naturally dry and thin, and they suffer from cracks occurring on the web of the foot. The application of a solution of nitrate of silver, by means of a camel-hair pencil, every second or third morning, will soon produce an improved condition of the skin.

CHAPTER II.

BUNIONS.

SECTION I.

STRUCTURE.

It is the popular opinion, and, I believe, the same is also entertained by many of the profession who have not made dissections of the parts concerned, that a bunion consists of an enlargement of the bones, forming what is called the ball of the great toe. The digital extremity of the metatarsal bone supporting the great toe, does undoubtedly become enlarged in some cases of bunion which have existed for a long period, and when the patient has suffered from repeated inflammatory attacks, but does not form the disease; it being the fibrous and soft structures that are chiefly

involved in the morbid action constituting the malady. In the natural and healthy condition of the foot, no bursa is found on dissection over the head of the metatarsal bone, entering into the formation of the joint of the great toe; but, when it has been subjected to pressure from boots too narrow for the foot, and, perhaps, the joint projected from causes hereafter mentioned, then a bursa will be found to exist. In various dissections I have made, I have found them in all stages of development, but never discovered one that might not be considered an adventitious formation arising from an extrinsic cause.

The affection to which the term bunion is applied should, for the foregoing reasons, be limited to a morbid condition of the internal lateral ligament, connecting the metatarsal and phalangeal articulation of the great toe, cellular tissue, and integument, and the development of a bursa mucosa, produced by pressure and irritation. And when the bone has become

affected, it is only secondarily, and must be viewed as a complication, and not as the disease.

The first effect of pressure towards the formation of a bunion, by boots and shoes pinching and squeezing the foot, is to excite a slight amount of inflammatory action in the skin and parts beneath; nature now attempts to counteract the violence done, and small cysts are developed between the fibres of the internal lateral ligament connecting the metatarsal bone, and first phalanx of the great toe. Should the pressure be removed and not renewed, the contents of these cysts become absorbed, and the patient experiences no further inconvenience. But if, on the contrary, pressure is continued, the conservative effects of nature are still exerted, and fresh cysts are formed in the ligament, and a bursa is formed over it. At length nature, wearied and overpowered, relinquishes the struggle she maintained, and the means she at first used as

repellant and palliative, conjoined to form the abnormal condition called a bunion. By the repeated formation of cysts, and recurrence of inflammatory action, the ligament becomes thickened, while the cohesion of its particles is lessened, and thus facilitates that species of subluxation of the great toe that frequently obtains in this state of the foot. The head of the metatarsal bone over which a bursa is formed, now appears enlarged, but is really due to the increase of the ligament just described. The altered condition of the parts render them more prone to inflammatory attacks, and they now occur from much slighter causes than those which led to the establishment of the diseased state. Though not generally the case, yet when a bunion has long existed, the bone will be found enlarged. Among the woodcuts (fig. 3) at the end of the book, is one showing not only the enlargement of the bone, but a fungous growth from the articular cartilage; it also shows very well

numerous cysts developed in the lateral ligament, and the bursa formed over it. The drawing was taken for me by Mr. Tuson, from a pathological preparation by the late Mr. Aston Key, and now in the Museum of Guy's Hospital. I have found, on dissection, similar growths from the cartilage, but not so large as that represented by the woodcut.

SECTION II.

CAUSES AND SYMPTOMS.

A bunion never exists except with a deviation from the natural form of the foot. Sir B. Brodie thinks boots and shoes too narrow across the tread, and for the toes, principally instrumental in bringing about this change. Mr. Aston Key considered it chiefly attributable to the natural weakness of the ligaments in young people, combined with their taking exercise disproportionate to their strength. He expresses himself on the subject as follows:

“This very troublesome and painful disorder is the effect, not so much of pressure from the shoe, as of excessive weight received on a weak tarsus and metatarsus. The change in form which the arch of the tarsus undergoes in young persons who are in the practice of taking much exercise on foot, has been overlooked; and, as being the cause and foundation of bunion, it deserves especial attention. In the

natural and perfect condition of the foot, before use, or rather abuse, has changed its beautiful proportion, the regularity of the arch, resting on its two points of support, the heel, and the metatarsal bones, calls forth admiration, by the combination of strength for the support of the body, with protection for the soft parts of the sole. From the metatarsal bone the toes proceed nearly in a straight line; and their extremities again furnish points of support, affording additional safety when the heel is raised in progression.

“In young persons, who are allowed or forced to take exercise on foot disproportioned to their strength, an alteration first ensues in the form of the tarsal arch. It becomes flattened in consequence of the ligaments, and probably the bones also, yielding to the superincumbent weight. If the pressure be continued, the under part of the arch at length nearly comes in contact with the ground, and

the patient becomes flat footed. On the outer part of the tarsus a corresponding change is perceptible; its surface becomes depressed and hollow, and thus a general appearance of deformity and awkwardness of gait are the result. I have seen the young, among the female part of many families, gradually acquiring this tarsal deformity, from the excess of exercise which they were enjoined by their parents to take; and, in truth, while the errors of our forefathers led them to confine girls within too strict limits, and allow them too little use of their limbs, that of the present day runs into the opposite extreme; and many a young person has the proportion of her feet spoiled, and the foundation of bunions laid, by being kept on her feet for hours without rest or intermission. In some, the deformity is confined to a slight projection of the head of the astragalus, which has weighed down the inner plantar ligament. This gives an uncouthness to the walk of the girl, and renders the foot

unsightly, but produces no other effect. The change of shape is not long confined to the tarsus; the joints of the toes suffer next, especially that of the great toe. The ligaments of this joint being strained in common with those of the tarsus, at length yield, and the toe is gradually forced outwards by the oblique bearing of the foot on its inner plantar surface. It is rarely that we find persons whose tarsal arch is flattened with a great toe in a line with the foot; it is usually inclined outwards, so as to form an angle with the metatarsal bone. The inner part of the joint thus forms an angular projection; slight at first, but becoming more and more prominent, as the pressure increases and the joint continues to yield.

“It is this kind of deformity in the arch of the foot, and in the bearing of the great toe, that gives rise to the formation of a bunion; and in the early part of life too much attention cannot be given to correct this oblique direc-

tion of the toe: it is more common than is generally thought. In the young it is more frequently met with among girls, especially in families in which the females are allowed unrestrained liberty of exercise, with a view of preventing deformity by bodily exercise and muscular strength. Like other extremes, that of excess in exercise becomes as pernicious as the other, which it is intended to correct. The growth of the foot of a delicate girl is ill able to bear the constant weight of the body, and by degrees sinks under it, and loses its beauty of form. Pain in walking at length is complained of; and when the foot is examined in search of a cause, it is found to present the changes just described."

It appears to me there are other causes concerned in the production of the deformity attending bunion, which have been entirely overlooked, namely the oblique action of several muscles, the tendons of which are inserted into the phalanges of the great toe.

The muscles more particularly tending to produce the deformity, are the extensor proprius pollicis, the extensor brevis digitorum (that portion attached to the great toe), the flexor longus pollicis, the adductor pollicis, and the transversalis pedis, these either from the obliquity of their line of action or the absence of any antagonistic muscle, have a powerful influence in drawing the toe towards the median line of the foot, and as the whole of the muscles of the leg are more or less in a state of tension during the act of progression, the outward pressure exerted on the head of the metatarsal bone is very great.

In many people a strong predisposition exists to malposition and distortion of the toes, and may be observed in the children of the poor, whose feet have not been subject to the contorting influence of shoes. In some cases even an hereditary disposition appears to obtain, partly perhaps from the several members of the family partaking of the same constitu-

tional weakness and insufficiency of strength in the ligamentous structures of the feet. Various occupations also predispose to bunions, as exemplified in waiters, footmen, and others who are on foot for many hours during the day, and who, for the most part, wear shoes, consequently the tarsal arch receiving not the slightest support, sinks under the constant weight, the foot becoming flattened and the joint of the toe projected.

The pain arising from bunion differs from that experienced from a corn, being more of an aching character, except when inflammation has seized on the part, then violent throbbing takes place, with heat, redness, and swelling of the integument. The bursa becomes distended with serum, and should inflammatory action increase, the serum will be replaced by pus, which may also infiltrate the cellular tissue external to the bursa, the pain is now greatly aggravated, and the whole system may be affected. Sometimes a corn forms upon the

most projecting point of the bunion, and the patient's discomfort is considerably increased, as well as the liability to inflammatory attacks. Frequently the integument over a bunion becomes dry and rough, occasioning much annoyance by the unpleasant sensation conveyed, and the clinging of the stocking to the foot.

SECTION III.

TREATMENT.

The first thing to be done for the relief of a patient suffering from bunion is, that he should be provided with a shoe of sufficient breadth of sole, and of the form of the foot. If inflammation does not exist, or if only to a slight degree, great comfort will be afforded by the application of a piece of soft silk or unglazed calico, or thin piece of amadou spread with adhesive plaster, or the aconite plaster previously recommended for corns; it should entirely cover the affected part, and extend some little distance on the sound integument. To relieve the joint from pressure, pads extending well on to the unaffected parts should be judiciously arranged around it, care being taken to avoid increasing the inward direction of the toe; they should be made of thick amadou or soft felt, but not of leather, for the reasons previously urged when speaking of corns; care must be taken to cut the edges of

the central aperture evenly, and having a gradual bevel at an angle more or less acute according to the case.

Should inflammation attack the bunion, and the foot become hot, swollen, and painful, and the skin over the joint red and shining, it may be necessary to confine the patient to the sofa, and to have recourse to leeches; to be followed by hot fomentations of decoction of poppy heads and chamomiles, and afterwards the application of a light linseed-meal poultice to be renewed as often as circumstances shall demand. If the local inflammation should have induced any disturbance of the general system, or rendered the patient feverish, it will be necessary to prescribe such antiphlogistic remedies as the greater or less severity of the case may require, and which will be the more imperative if the patient has been accustomed to live freely.

When inflammatory action proceeds to supuration, it will be necessary to lay the cavity of the bursa freely open, but the use of the

bistoury must not be resorted to so early, as in ordinary abscess; though I cannot concur with the recommendation of Mr. Aston Key, of allowing the pus to find its own way to the surface. Suppuration should be allowed to be fully established before making an opening, and then the incision must be free so that the suppurating cavity be thoroughly exposed. A poultice must be immediately applied, no squeezing out of the matter, or other meddling interference should be practised. On the following day, after the inflammation has somewhat abated, it may be advisable to fill the cavity loosely with lint or charpie in order to induce destruction of the secreting surface of the bursa; to accomplish this purpose it will sometimes be necessary to use the nitrate of silver, which will generally succeed: but cases will be met with in which the concentrated nitric acid must be applied, this may be done by means of a small piece of lint on the end of a probe. The potassa fusa is objectionable in these cases

as being less manageable, though a most valuable caustic for many other purposes.

The fluid distending the cavity of the bursa being seropurulent, or the quantity of pus formed being small, an endeavour may be made to produce absorption, after subduing inflammation by fomentation, rest, &c., ~~and~~ by blackening the skin by passing the nitrate of silver once or twice lightly over the part previously moistened with water, and the same thing repeated as soon as the skin exfoliates.

For the purpose of affording permanent relief, other means besides the foregoing must be had recourse to. The object to be obtained being to restore the toe to its position in a line with the phalanx supporting it. This may be effected by having a separate compartment formed in the stocking for the reception of the great toe. The boot must be broad in the tread, and without being tight, must fit the instep well, that the foot may not slip about; from the inner surface of the sole

a piece of stiff leather should project so as to separate the great toe from the second, and to bring the former into its proper position in a line with the metatarsal bone. During the night the patient may wear an apparatus I have contrived, and will be found to answer the purpose desired. It consists of a light spring connected with a laced bandage made of linen or other material, fitted to the instep, and extending to the toes. The spring is fixed at a point over the tarsus and extends forward in the direction corresponding with the metatarsal bone, the free end is furnished with a loop for the purpose of connecting it with the great toe. By the curve given to the spring, the toe is drawn inwards to the median line of the body, while the bandage tends to press the head of the metatarsal bone in the opposite direction.

In order to promote absorption of the deposit that has taken place in the ligament and other structure, or when the head of the me-

tatarsal bone is enlarged, the skin should be repeatedly blistered by a caustic solution of iodine, made according to the following formula :

R Iodinii;
Potass. Iodid., āā, ʒiv ;
Spir. Vin. rectificati, ʒj. M.

When a corn exists on the prominent part of a bunion, it demands more attention than when situated elsewhere, from the increased suffering it occasions, and its inducing inflammation in the bunion. Suppuration more frequently takes place beneath a corn so situated than when on any of the toes.



CHAPTER III.

INGROWING OF THE TOE-NAIL INTO THE FLESH.

SECTION I.

FORMATION AND GROWTH OF THE NAILS.

It may not be out of place here to mention another affection, arising partly from the same cause as corns and bunions, termed "ingrowing of the nail," a designation most unfortunate, as leading to an erroneous notion of the disease.

To the right and proper understanding of this affection, and to arrive at a rational plan of treatment, it will be necessary first to consider the structure and mode of growth of the nails.

Like the epidermis they are formed of cells, secreted by the cutis, flattened and intimately blended together. In form they are doubly convex externally, concave internally, they are thickest towards their free margin, thinnest at the root or that part implanted into the fold of dermis, which is about two lines in depth, acting the part of a follicle to the nail. At the bottom of the dermoid fold are situated a number of papillæ which secrete the cells forming the margin of the root, and by a successive production of the cells the nail is pushed forward in its growth. Beneath the concave surface of the nail are numerous vascular papillæ, those between the margin of the lunula and the free extremity of the nail being larger and more vascular than those beneath the lunula itself: they are arranged in longitudinal plaits, and perform the double function of secreting additional cells to increase the thickness, and at the same time present an extended surface for the adhesion of the

nail. Cells are also formed in the furrows between the lines of the papillæ, causing the under surface of the nail to present a number of ridges corresponding to these furrows. This longitudinal arrangement is plainly observable by the lines on the external surface, and it will be noticed, these lines run parallel to each other and do not diverge in the slightest degree; by which it is clearly evident the nail increases only in its longitudinal direction, and not at all laterally.

The reader is referred to the various excellent works on Anatomy and Physiology for further information on the growth and structure of the nails, enough having been here stated for the purpose of illustration, with respect to the disease under consideration.

SECTION II.

CAUSES AND SYMPTOMS.

It is not intended to consider any other form of disease occurring about the nail joint than that to which the term ingrowing nail is strictly confined. This affection occurs most frequently at the outer lateral groove of the nail of the great toe, next to the second toe; those individuals being especially liable to it who have the great toe turning outward and overlaying the adjoining one. Constriction by boots and shoes too narrow for the toes is undoubtedly the most general cause of the disease; it may also arise from cutting the nail too short, or cutting it away at the side, or by its being broken by accident: in either of the two latter cases the integument being freed from pressure, rises above the margin of the nail, which in its onward growth penetrates it, giving rise to troublesome ulceration. When the disease is occasioned by the pressure of boots too narrow for the toes, the nail is

generally rendered more convex transversely than natural; and when the weight of the body is thrown on the foot in progression, the soft parts are pushed upward against the edge of the nail, all lateral extension being prevented by the constriction the toes are subjected to, irritation and inflammation are set up, followed by ulceration. If the disease is not attended to in an early stage, ulceration extends somewhat, and a fungus growth springs up. The pus secreted is thin, and in some cases fetid; inflammation does not generally extend beyond the part immediately affected.

The pain attending this disease is not usually great, unless during exercise; but when the weight of the body rests on the limb, causing the nail to penetrate the fungus excrescence, the pain is very severe.

Wardrop¹ thus describes the commence-

¹ An Account of some Diseases of the Toes and Fingers, with Observations on their Treatment. (Medico-Chirurgical Transactions, pp. 130-1.)

ment of the disease. "This affection is chiefly confined to the great toe. It frequently happens, when the foot is kept in a tight shoe, that the soft parts situated on the edge of the nail thicken, are pressed over, and become more or less inflamed and painful. If the inflammation and thickening of the soft parts increase, the edge of the nail becomes at last completely imbedded in them, and its sharp edge, from the pressure of the body when resting on the foot, increases the inflammation and produces suppuration of the contiguous soft parts. Thus the hard and sharp nail, by pressing on the surface which has become ulcerated, causes great pain and lameness, and, in many cases, prevents the person from walking. The ulceration generally extends round a considerable part of the nail, and a fungus arises from this surface, accompanied by excessive irritability.

"All those authors who have taken notice of this affection have considered a peculiarity

in the growth and in the formation of the nail as the cause of the disease in the soft parts. The different modes of treatment, therefore, which have been proposed, are directed to remedy the supposed deformity of the nail.

“Some direct that the edge of the nail which presses in upon the tender soft parts, should be raised by placing underneath it a piece of tin plate, and thinning the middle part of the nail by scraping it with a piece of glass, thus allowing the nail and its edges to turn upwards from the soft parts, and assume a new form. Others advise the edge of the nail to be cut away, so that it shall be out of the reach of the soft parts.

“An accurate examination, and, above all, observing attentively the progress of the disease from its commencement, will be sufficient to prove that the nail undergoes no alteration in its shape, and that it has no further share in the production of this trouble.

some complaint than affording a mechanical resistance to the tender flesh, and becoming from its proximity to it a constant source of irritation."

Chelius¹ remarks: "The Ingrowing of the Nail into the flesh depends less on an increase of the breadth of the nail than on the pressure upwards of the soft parts. It is ordinarily consequent on squeezing together of the toes by tight shoes, especially if the nails be cut too short, and is almost confined to the great toe. The irritation of the edge of the nail causes inflammation; at first the secretion of a serous fluid, which dries to a callous mass, subsequently suppuration and fungous excrescences spring up, which spread over the nail; the disease may even assume a carcinomatous character, or the inflammation may extend to the bone. The nail itself grows thicker, and is frequently softened at

¹ Chelius; System of Surgery, translated by South, p. 198.

the ulcerated part. The pain in the severe form of this disease is always very great, and walking often becomes quite impossible."

Colles¹ says, "In this disease we observe, at the angle of junction between the anterior and external edges of the nail, an ulcerated fungus, into which this angle, as also a portion of the outer portion of the edge of the nail, are more or less sunken. The colour of the fungus is rather florid, its surface is smooth, the discharge is purulent; in small quantity and tolerably healthy, unless the part has been irritated by too much exercise of the limb, or by some external application or local injury; there is little or no surrounding inflammation; no enlargement of the toe; and the pain is generally trifling, unless during exercise, when the weight of the body on the limb causes the nail to press into the soft substance of the

¹ Observations on some Morbid Affections of the Nail of the Great Toe. (Dublin Journal of Medical Science, vol. xxiii, p. 240.)

fungus, which thus often induces considerable uneasiness and lameness.”

There is another affection of the lateral groove of the nail caused by a redundant formation of epidermic scales, somewhat after the nature of a corn, but loosely connected together. It causes much pain, inducing lameness, and has been treated for gout.

Colles¹ writes: “There is another morbid affection which occasionally engages the anterior and inner angle of the great toe nail, and which causes considerable lameness and uneasiness, particularly on pressure; this affection is often mistaken for an attack of gout, especially in those persons where such an attack may be expected or even desired. In this disease there is no swelling or redness; but pain, on pressure, at the anterior and inner angle of the nail. On close examination of this spot, we find that this angle rests on a

¹ Ibid., pp. 244-5.

hard, white mass of laminated, horny cuticle, which we can easily remove in bran-like scales, when we shall see a small cup-like cavity, without any ulceration or disease. The angle appears thick and bulbous opposite this point, and the pain is caused by its pressing against this mass. This affection is easily cured, by scraping away all this substance, and excising the bulbous angle of the nail, and then interposing a little lint. Attention is required, for some little time, to remove any unhealthy growth of the cuticle or nail, and to secure the patient from any further uneasiness. Finally, I may remark, I have never seen this disease engage the outer angle, neither have I seen that last described engage the inner angle of the toe nail."

SECTION III.

TREATMENT.

From the improper nomenclature of this disease, and from want of due reflection on the mode of growth and formation of the nails, many eminent surgeons in the treatment have been induced to practise evulsion of the nail, an unnecessarily severe and painful operation, and one which is by no means attended with general success. Nor is the scraping of the nail, recommended by some, followed by any advantage.

In the commencement, the toes must have room in the shoes for lateral extension when they receive the weight of the body. If the disease has not existed long, and is not severe, some scraped lint should be gently but completely inserted beneath the margin of the nail; then a strip of silk or unglazed calico, five eighths or three quarters of an inch in width, spread with adhesive plaster, should be made to encircle the toe two or three times;

the end is first applied to the part pressed on to the nail, and the strip carried under the toe with sufficient tightness, whereby the soft textures may be pulled from and be prevented pressing on the nail. If the fungous excrescence is exuberant in its growth, it must be reduced by escharotics ; the sulphate of copper will be found to answer best at first, afterwards the nitrate of silver in substance, or a lotion containing an astringent mineral salt, applied by means of a small pad of lint. The use of the strip of plaster, and inserting the scraped lint beneath the nail, must be continued till the cure is complete.

Chelius adopts the following plan :¹ “ In the slighter forms of this disease it may be always easily relieved by inserting a slip of lead under the edge of the nail, which is to be fixed there by twisting round it a piece of sticking plaster, by which the nail is raised and the flesh depressed. If there be fungous excres-

¹ South's Translation, p. 199.

cences, these must be first removed with lunar caustic, or cut off with the knife. It would be too painful at once to insert the plate of lead beneath the nail: but it is also unnecessary, as its insertion under the front edge, if the nail be allowed to grow, gradually raises the hind part, and then the lead may be further introduced. When the nail has recovered its proper direction, it must not be cut too short, nor rounded at the sides, but only shortened transversely. With these precautions, this treatment, recommended by Desault and Richeraud, has, in almost all cases, answered my wishes.”

Should the treatment mentioned not succeed, Chelius has recourse to Dupuytren’s operation of evulsion.

Biessey¹ scrapes the whole free surface of the nail, till nearly its entire thickness is destroyed, particularly in the centre. Then he

¹ Remarks on Inverted Toe-Nail, (Philadelphia Journal of Medical and Physical Sciences, vol. ii, 1821.)

touches the scraped part five or six times, more or less severely, with lunar caustic, till the nail contracts completely, and draws out of the flesh. He lays pads of charpie under the edge of the nail, till, by its growth, it stretches over the bulbous part of the toe.

Zeis¹ especially recommends the introduction of charpie under the edge of the nail, and the use of foot bats.

Dupuytren, Larrey, Sir Astley Cooper, Liston, and others, had recourse to evulsion of the nail: the same operation is practised by many surgeons of the present day. South deprecates the proceeding, and Colles² says: "This operation inflicts a great degree of suffering, because in this disease the nail is not, as in onychia, separated from the vascular and highly sensitive matrix, except only through a small extent of space, not more in any direc-

¹ *Cursory Remarks on Inverted Toe-Nail*, (Philadelphia Journal of Med. and Phys. Sciences, vol. ii, 1821; and Half-Yearly Abstract of Medical Sciences, vol. ii, p. 93.)

² *Dublin Journal*, pp. 242-4.

tion than a quarter of an inch at its external angle, and, therefore, the scissors pushed upwards between the nail and adherent matrix, and forcible evulsion of the former by the forceps, must cause exquisite pain, which, though of short duration, can be regarded as nothing short of actual torture. . . . I am by no means an advocate for this peculiarly painful and distressing operation; but, on the contrary, I believe we may be relieved from the necessity of performing it, and that we can, in all instances, effect a permanent cure, by a very simple operation, and one comparatively free from suffering, namely, by the excision of the nail to so much only as is already detached from the matrix; all of this portion, as well as that imbedded in the fungus, must be removed.

“To effect this I proceed thus as follows: while an assistant with a spatula presses down the fungus, I seize with a forceps (with strong flat blades, like those of the torsion forceps,)

the edge of that portion of the nail, close to the fungus, as high as it can go, taking care to direct it to the outer edge of the nail; this enables me to judge how far the nail is detached. I then take a pair of strong crooked scissors of a large size, with one sharp-pointed blade; this I introduce beneath the nail as far as the probe has directed me: with one stroke of the scissors I then cut off all this detached portion of the nail, while by means of the forceps I draw it away with moderate force: should this attempt fail to remove it, I then re-examine the part with the probe, and again reintroduce the scissors as high as they can be pushed; a second cut will then complete the separation, and admit of the easy removal of this part of the nail: this second attempt is sometimes attended with sharp momentary pain, as the point of the scissors often enters a short distance into the sensitive matrix. The portion of detached nail presents no change of texture whatsoever; but a few

drops of blood follow this operation. The only dressing required is a small bit of dry lint, which is to be pressed firmly with the probe between the fungus and the edge of the nail. In a few hours the toe is free from pain, and the patient can walk without any lameness or uneasiness in three or four days after the operation. The dressing continues perfectly dry, and need not be changed until the fourth day; at this time the fungus will be found much reduced in size, perfectly dry, and of a firmer consistence; a bit of lint is to be reapplied as before, it should not, however, be pressed down so firmly as at the first dressing. In the course of ten or fifteen days the fungus will have entirely disappeared, and the parts be restored to a healthy state. I have never found it necessary to apply the olive-shaped cautery to destroy the fungus as described by Dupuytren. In the course of this treatment I also advise the patient (in compliance with the rules laid down by authors)

to scrape the upper and outer surface of the nail with a sharp penknife, or with a bit of glass, an instruction, however, which the patient neglects, as soon as he feels himself relieved from pain.

“It affords me much gratification to be enabled to state, that in no instance have I met with a case of relapse, after this operation has been efficiently performed. But the result of the operation itself is not in all cases so successful as I have hitherto represented, for in some instances, four or five days after the operation, the patient will complain of some uneasiness in the toe, when we shall find, on examination, that the dressing is moistened with a little discharge, and that a small portion of a whitish substance, like soft and swollen leather, is rising up through the fungus. This substance may be regarded as a sort of accessory ungual filament, arising close to the original nail from the anterior and outer border of its matrix, and which is now

altered in texture and direction ; this filament is so soft, that it breaks and tears, if caught by the common dissecting forceps ; in order, therefore, to remove it (which it is necessary to do) we must seize it with the torsion forceps, and excise it with one cut of the scissors, passed well and fully beneath it ; the lint dressing is to be reapplied, in the manner before mentioned, and the case will proceed without interruption to a perfect cure."

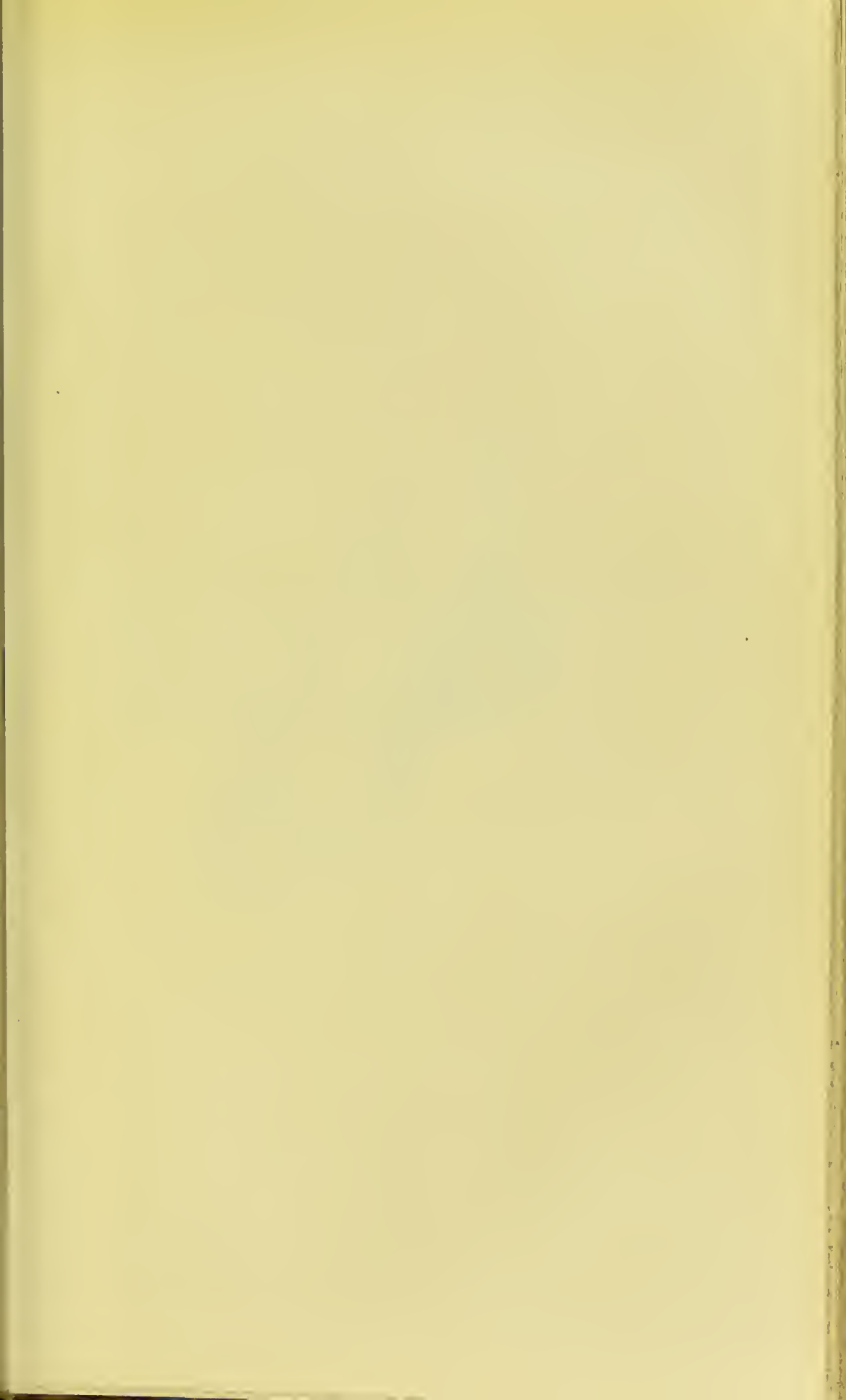


FIG. 1

Represents the second toe resting on the extremities of the great toe and third toe; the first joint being prominent, by which it is exposed to the pressure and friction of the boot, and consequent formation of a corn.

FIG. 1.





FIG. 2

Is the reverse of the preceding, the second toe being beneath, and pressed upon by the adjoining toes, and the joint rendered angular and projecting.

FIG. 2.





FIG. 3

Is taken from a preparation in the Museum of Guy's Hospital, and represents the altered condition of the several structures in a case of bunion of long standing.

- a.* The head of the metatarsal bone.
- b.* The enlarged portion of it.
- c.* Fungous growth from the articular cartilage.
- d.* Bursa developed over the lateral ligament.
- e.* Cysts formed between the fibres of the ligament.

FIG. 3.







FIG. 4

Is a drawing of a foot of the natural form, resting on the heel, extremity of metatarsal bones and toes. The arch well curved, and affording protection to the vessels, nerves, and soft parts.

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FIG. 4.







FIG. 5

Illustrates the flattening of the foot that generally precedes the formation of bunion. The joint is projected from the several causes specified in the text.

FIG. 5.



